European Online Journal of Natural and Social Sciences 2013;
Vol.2, No.2 Special Issue on Teaching and Learning.
ISSN 1805-3602
www.european-science.com

The Relationship between Emotional Intelligence, Perceived Stress and Academic Performance among Iranian High School Students

Auoob Ebrahimi
Farhangian University, Tehran, Iran
ebr_au@yahoo.com

Abstract

The purpose of this study was to test the relationships between age, gender, and emotional intelligence, academic performance and perceived stress among high school students in Iran. For this purpose, 150 students were randomly selected among the high school students in Shahre-Rey, Iran. Emotional intelligence and perceived stress questionnaires were used. The results showed that emotional intelligence was significantly different by gender, with females evidencing higher EI than males. Females also reported slightly higher perceived stress, but the gender difference was not significant. Emotional intelligence evidenced a small amount accuracy in predicting GPA in the fall, but this dissipated in the spring. Emotional intelligence and age evidenced a small amount of accuracy in predicting perceived stress in the fall. However in the spring semester, emotional intelligence evidenced strong accuracy in predicting perceived stress.

In the fall 2013, as individuals better managed their own emotions GPA increased and perceived stress decreased. As individuals better managed others' emotions GPA decreased. Females got higher AES scores then males, but no age differences were noted. In the Spring 2013 older individuals with higher AES scores, who better managed their own emotions evidenced lower perceived stress.

Key words: Emotional intelligence, perceived stress, academic performance, high school students

1. Introduction

There has been substantial interest in identifying and measuring attributes beyond traditional cognitive abilities associated with student success and later success in medical practice. One approach to measuring nontraditional attributes is through emotional intelligence (EI) and emotional competencies (EC). Research suggests that non-traditional measures of intelligence, such as emotional intelligence may be better predictors of success than traditional psychometric IQ tests and other standardized measures of academic achievement (Goleman, 1998; Dryden &Vos, 1994).

Emotional intelligence or EI is defined as (1) an individual's set of abilities, both verbal and nonverbal, to perceive, understand, utilize and manage personal emotions, as well as the emotions of other individuals. (2) An individual's mental ability to utilize and manage emotions in solving problems. This includes the ability to successfully guide thinking and actions and facilitate successful adaptation to demands and pressures presented by the current environment (Schutte, Malouff & Bhullar, 2007). In the context of this study, EI is interpreted as trait or level of skill that facilitates individuals' ability to adjust and adapt successfully to the pressures and demands of the environment. This includes accurate interpretation, expression, management and use of personal emotions. It also includes accurate interpretation of the emotions of others. This trait or skill guides productive solutions to problems and increases ability to cope with environmental stress. Emotional Competen-

cies are defined as the skills developed from emotional intelligence that can be operationalized for success (Goleman, 1998; Caruso, Mayer, &Salovey, 2002).

The level of EI is directly related to the ability to learn emotional competencies and thus, higher EI implies higher emotional competencies (Bar-On, 2000). One specific emotional competency addressed in this study that relates to success in the field of medicine is the ability to manage stress. This can also be described as the ability for positive coping and resilience (Dyrbye, Thomas &Shanafelt, 2006). Medical school can be stressful and the ability to manage stress is a major factor of success for medical students (Pau, et al., 2004). It is difficult to balance personal and academic experiences to maintain well-being and academic success. Effective stress management is positively correlated with improved performance (Stewart, et al., 1999).

Emotional intelligence (EI) is becoming an answer to demystify the question of what predicts success of those in leadership roles (Day, Newsome & Catano, 2002). It has been offered as an explanation to coping with high pressure in the work environments and improved resilience in mood after negative mood induction. Research also suggests that emotional intelligence can improve with age and experience (Goleman, 1998; Bar-On, 2000). If emotional intelligence can be improved, this implies that leadership, success, ability to cope with environmental stress and other factors related to emotional intelligence may also be improved.

1.2. Statement of the problem

EI has become an accepted measurement in the corporate world and is becoming more a focus in health education (Austin, Evans, Magnus & Ohanlon, 2007). Traditional medical school admissions criteria such as undergraduate grade point average, MCAT scores, letters of recommendation and medical interviews remain successful predictors of graduation from medical school, but EI and emotional competencies may provide one of the nontraditional methods to evaluate and develop some of the key attributes that define good doctors (Elam & Stratton, 2001). Individuals who demonstrate high EI and emotional competencies are also highly skilled in identifying and responding appropriately to the emotions of others. As patients take more proactive roles in personal healthcare, the demand for emotional competencies has also increased.

1.3. Importance of the study

The relationship between EI and success has been studied for over two decades. For the past ten years, it has been incorporated into healthcare research, including its impact on nursing, pharmacy, dental and medical education. Initial research findings in these fields have highlighted relationships between EI and 1) performance, 2) patient communication skills and 3) perceived stress. In the area of performance, EI was positively correlated with improved self-efficacy which is linked to increased academic performance (Bellanger, et al, 2007). EI was also found to contribute to academic performance beyond IQ. In addition, academic performance was negatively correlated with perceived stress (Stewart, et al., 1999). In regard to improved medical practice performance and patient communication skills, physician EI was positive correlated with patient satisfaction (Wagner, et al., 2002).

These studies provide an initial foundation from which to expand research of EI as it relates healthcare and healthcare education. The above research studies have suggested the need for additional research to increase generalizability of these findings to other fields of study such as education and training. The current study contributes further insight to current body of research in EI as it relates to students' performance and stress in education, especially among high school students in Iranian context.

1.4. Research Questions

1. What is the effect of EI on academic performance among Iranian high school students?

2. What is the effect of EI on perceived stress in among Iranian high school students?

1.5. Research Hypotheses

1. Emotional intelligence will be positively correlated with academic performance among Iranian high school students

2. Emotional intelligence will be negatively correlated with perceived stress among Iranian high school students

2. Review of Literature

2.1. EI and Academic Achievement

One study by Bellanger, Smith, Lewis, Harrington, & Kasper, (2007), measured over 600undergraduates' survey responses at 20 US institutions on how effectively students in computer science and information systems managed stressful situations. Researchers then compared it with students' levels of EI. In this study, EI was defined as the ability to perceive, assess, and positively influence personal and others' emotions. The effects of these intrapersonal factors were then compared with student grades. The researchers concluded that although students' EIwas not directly related to academic success, higher levels of EI positively correlated with self-efficacy. This was defined as self-confidence and ability to handle problems or challenges effectively. Self-efficacy was linked to increased academic performance. Further research is necessary to determine whether EI is a good predictor of success or failure in computing studies and careers (Smith & Belanger, in press).

Another study by Lam and Kirby, (2002) measured the correlation between EI and individual performance in an undergraduate student population. EI was measured by the Multifactor Emotional Intelligence Scale (MEIS) developed by Schutte et al. (1998) and general intelligence was measured by the Shipley Institute of Living IQ in 304 undergraduate students in a U.S. university. Researchers determined that EI did significantly contribute ($p<0.01$) to individual cognitive-based performance beyond the level attributed solely to general intelligence. However, researchers cautioned the ability to generalize the results of the study and suggested further research is needed.

Carrothers, Stanford and Gallagher (2000) piloted a trial of an EI assessment that was used on applicants at three consortium medical schools. ACT scores and GPA were not highly correlated with the assessment. However, interview assessment scores were correlated with the EI scores ($R2=0.761$). Gender comparisons revealed that female EI scores were higher ($f=189.2, m=176.5$) when compared to male scores. Researchers also concluded from the pilot study data, that the instrument did indeed measure attributes that suggest desirable personal and interpersonal skills in medical school applicants. Researchers suggest that further studies must be completed to further establish validity and reliability of the instrument. Researchers also suggest that further research should be completed to see if the instrument may be effective in predicting medical school performance.

2.2. EI Stress and Coping Strategies

Stewart, et al (1997) investigated depression and anxiety in first year medical students. A repeated measures design was used with a sample of 121 medical students (81% of the class). The students completed two surveys, one prior to the start of the first semester and the second approximately 8 months into the first year of medical school. Researchers found an increased concern about curriculum and environment, personal competence and endurance, and time to have a life outside medical school. The increase in these concerns correlated with an increase in depression and anxiety. Researchers also found use of avoidant coping strategies and low dispositional optimism resulted in increased depression and anxiety. However, on the end of year survey, it was found that active coping strategies and positive reinterpretation of events resulted in decreased depression and

anxiety. These findings suggest early identification and intervention to understand the potential stress of medical school can be beneficial to students. If students learn to identify active coping and avoidant coping tendencies it may be helpful in reducing or preventing distress.

Stewart, et al (1999) completed a follow up study to the repeated measures survey investigating depression and anxiety in first year medical students (Stewart, et al., 1997). This study further investigated the relationship of depression and anxiety on academic performance. Researchers compared the findings of the previous study with premedical academic scores and grades over the first 2 years of medical school. Researchers found pre-medical-school academic performance was a strong predictor of medical school academic performance. Overall academic performance prior to and during the first two years of medical school was negatively correlated with reported stress levels. In addition modest negative correlations were found between self-reported coping strategies of 'humor' and 'wishful thinking' and academic performance.

One study by Pau and Croucher (2003) investigated the relationship between EI and the ability to cope with perceived stress in a sample 213 of undergraduate dental school students. EI was measured using a validated scale Multifactor Emotional Intelligence Scale (MEIS) developed by Schutte et al. (1998). Perceived stress was measured by Cohen's Perceived Stress Scales (PSS- 10). Researchers found that EI scores were inversely related to perceived stress scores. Researchers concluded that dental students with higher levels of EI may be better equipped to deal positively with perceived stress in both academic and non-academic arenas. Researchers suggest that improving EI of dental students may also improve ability to cope with stress.

Pau, Croucher, Sohanpal, Muirhead and Seymour, (2004) completed a qualitative follow-up study to identify how dental students with high and low EI differed in dealing with stress. The researchers found that students with ratings in the high EI group were more apt to utilize reflection and appraisal, social and intrapersonal, and organization and time-management skills. Students with ratings in the low EI group were more apt to rely on unhealthy behaviors such as procrastination, social withdrawal, or use of tobacco products. Again, researchers suggest additional research in focused on improving EI in dental students would also increase ability to cope with stress.

To further assess the relationship between EI and perceived stress, a multinational survey was completed including dental schools in seven countries (Pau, et al., 2007). The total participants included 596 dental undergraduate students. The study found that females, younger students, those without previous graduate education experience, and those not satisfied with their decision to study dentistry were more likely to report perceived stress when compared to their counterparts with females reporting higher levels of perceived stress compared to males. The study also found a significant inverse relationship between EI and perceived stress. The significant predictors include gender, previous higher education qualification and lack of satisfaction with the decision to enter dental school. Researchers concluded that a distinct inverse relationship exists between EI and perceived stress across sociocultural and academic contexts of undergraduate dental school.

3. Methodology

3.1. Description of the Population and Sample

In order to achieve the objectives of the present study Normative Survey method was used for investigating the inter-relationships amongst the variables in Iran. The population for the present study was the same high school students randomly selected from among some high school in Shahre Rey, Iran. For the selection of sample, the researcher collected the details of all the high schools in Share Rey. Using simple random procedure from the list of schools the researcher identified 5

schools. Further, from each of the identified schools, 30 students were randomly selected. The final sample for the present study consists of 150high school students.

3.2. Instruments

*Assessing Emotions Scale (AES):*The Assessing Emotions Scale (AES) is a 33 item self-report measure of emotional intelligence that assesses characteristic, or trait, emotional intelligence developed by Schutte et al(1998). The Assessing Emotions Scale has also been cited in literature as the Emotional Intelligence Scale (EIS), the Self-Report Emotional Intelligence Test/Inventory (SSRI), or the Schutte Emotional Intelligence Scale; though the name differs the scale has not changed (Schutteet al, 2007). The AES is founded on Salovey and Mayer's (1990) original model of emotional intelligence, as well as the revised model Mayer, Salovey, and Caruso (2004). In their 1990model, Salovey and Mayer described emotional intelligence as a blending of abilities and traits. More recently, Mayer and Salovey have focused more on a pure ability conceptualization of emotional intelligence (Mayer et al., 2004). The 33 item instrument uses self-report with a five-point Likert scale, where a score of 1 represents "strongly disagree" and a score of 5 represents "strongly agree". The respondents' rate each statement to the extent it describes them, using the 1-5 point Likert scale. According to the Flesch-Kincaid reading formula a fifth grade reading ability is required to complete the scale and the average completion time for the instrument is five minutes (Schutte et al 1998). Total scale scores can be calculated by reverse coding items 5, 28 and 33, and then summing all items. Total scores can range from 33 to 165. Higher scores suggest more characteristic emotional intelligence. Based on the results, of the principal component analysis supports a strong single factor which included the 33 items. Schutte recommended using total scores on the 33-item scale. However, 3 and 4 factor solutions have also been suggested by research.

*Perceived Stress Scale-10 (PSS-10):*The Perceived Stress Scale-10 (PSS10) is a shortened version of the original PSS. The original 14 item PSS scale was developed by Cohen, Kamarck and Mermelstein in 1983 based on Lazarus's theory of stress appraisal (Lazarus &Folkman, 1994, as cited in Pau, et al, 2003). The PSS-10is a self-report questionnaire consisting of 10 items that rates personal perceptions of stress developed by Sheldon Cohen (1988). The scale measures individual evaluation of personal stressfulness situations that have occurred in the past month. The PSS-10 and PSS-4 versions were developed after the 14-item self-report instrument (Cohen et al., 1983). When all three scales are compared, the PSS-10 is preferred because it has a tighter factoral structure and better internal reliability (Cohen et al 1999).Respondents rate themselves on 10 questions with 0 to 4 point likert-type scoring where 1meaning "never, 1 meaning , 2 meaning , 3 meaning and 4 meaning "very often". The respondents answer each question rating their perceived stress experiences during the past month. A single score is obtained by reversing the scores on the four positively stated questions,(items 4, 5, 7, 8) and then summing across all 10 items. Total scores can range from 0 to 40, with higher scores indicating greater stress. However, the PSS-10 is not a diagnostic scale and therefore does not provide cut-off scores for different ratings of perceived stress.

3.3. Procedures

Students completed multiple instruments during the fall and spring of the academic year 2011-2012. Student ID was used to record data and reduce error in recording data. After all data was recorded, personal student information was removed to maintain anonymity of individual results. Student personal identity remained anonymous in the event of any publication regarding this study.

In order to ensure the protection of students, participation was terminated without consent if for any reason investigators believed that the procedures posed any negative consequences to the individual student's well-being or to any individual's academic performance. All participation was voluntary and students were informed they could withdraw from participation at any time. Data ga-

thered from this study were entered into SPSS. Access to the stored data was password protected and only the principal investigator and co-investigator had access to the student information.

The independent variables included the 4 factor scores (perception of emotions, managing own emotions, managing others' emotions and , understanding emotions) and total score of the Schutte et al. (1998) Assessing Emotions Scale (AES), age and gender. The dependent variables included:1) Fall GPA 2012, 2) Spring GPA 2012, and 3) Individual perceived stress (PSS-10) scores.

4. Results and Discussion

In order to analyze data for the purpose of this study, Pearson's Product Moment correlation coefficient was used to assess associations between variables.

Hypothesis One: Emotional intelligence is positively correlated with academic performance among Iranian high school students. Table 1 indicated the results of the study.

Table 1. Descriptive statistics sample for male and female in Iranian context

	Male		**Female**	
Variable	Mean	SD	Mean	SD
Academic Performance				
Fall GPA	2.35	00.69	2.45	00.49
Spring GPA	3.20	00.72	3.23	00.60
Weighted Total	79.02%	06.86%	81.11%	06.98%
Perceived Stress				
Fall PSS-10 Total Score	22.45	06.34	23.60	05.11
Spring PSS-10 Total Score	22.56	06.31	23.34	06.08
Emotional Intelligence				
Fall AES Total	120.23	11.45	126.34	11.89
Perceiving Emotions	36.45	04.36	38.43	04.22
Managing own Emotion	34.43	03.78	33.45	04.11
Managing other's Emotions	28.13	04.12	30.23	03.87
Understanding Emotions	19.27	02.67	21.54	02.43
Spring AES Total	126.43	15.14	129.48	13.96
Perceiving Emotions	38.67	05.21	41.45	05.87
Managing own Emotion	35.87	05.65	34.26	04.89
Managing other's Emotions	27.75	05.29	31.24	04.12
Understanding Emotions	20.85	03.17	21.90	03.28

A total of seven linear regression analyses (see Appendix A) were completed to address hypothesis one. The section will be as follows (1) Fall GPA 2012 includes models 1 and 2 and 3 (2) Communication total includes models 4 and 5 (3) Spring GPA includes models 6 and 7.

This researcher hypothesized that emotional intelligence, age and gender would be associated with academic performance. It was anticipated that there would be a positive relationship between emotional intelligence and GPA such that older female students who scored higher on a measure of EI would evidence a higher GPA. Correlational analysis and 7exploratory multiple linear regression analyses were used to test this hypothesis using Fall and Spring GPA. The results of this study found Model 2 using fall2012 AES four factors scores, age and gender supported this prediction. In the fall 2012, 2 AES factor scores, managing own emotions and managing others' emotions, along with gender were significant contributors to the regression model, while AES factor scores, perceiving and understanding along with age were not. Overall, the regression model using the four fall 2012AES factor scores, age and gender was significant with good accuracy in predicting fall GPA. Model 3 was a hierarchical linear regression used to measure the ability of gender to predict GPA above and beyond managing own and managing others' emotions. Results suggested small predictive power such that students who score higher on managing own and lower score on managing others emotions factor were more likely to have higher Fall GPA's and those individuals were more likely to be females. No significant results were found in the Spring of 2012. It was also anticipated that emotional intelligence would be associated with communication total. No significant predictive relationships were found. The small predictive ability of EI on academic performance found in this study is similar to positive associations found in previous research between emotional intelligence and academic success (Austin et al 2005) However, inconsistency in this relationship between the fall and spring semester, suggested a likely spurious relationship. One explanation is that this relationship between emotional intelligence and academic performance reflects the role emotional intelligence plays in facilitating the transition from one academic setting to another (Parker, 2003).

Table 2. Independent Samples test for Emotional Intelligence, Perceived Stress and Academic Performance

Variable name	t	df	P Value
Emotional Intelligence			
Fall 2012			
AES Total	-2.34	86	.040
Managing others	-3.85	86	.000
Understanding	-2.87	86	.032
Spring 2012			
Managing others	.2.90	48	.005

Hypothesis 2: Emotional intelligence is negatively correlated with perceived stress among Iranian high school students. Table 1 and 2 above indicates the results of this study.

This study also hypothesized emotional intelligence, age and gender would be associated with perceived stress. It was anticipated that there would be a negative relationship between emotional intelligence and perceived stress such that older female students who scored higher on EI would report lower perceived stress. Correlation and 6multiple regression analyses were used to test this hypothesis. Results from both fall and spring assessments supported this prediction. In Model 1 the fall 2012, AES total score was the significant contributor while age and gender were not. Overall, the regression model using fall AES total score, age and gender was significant with low accuracy in predicting fall perceived stress. In Model 2, AES factor, managing own emotions was a significant contributor, while the 3 other factors, managing others, perceiving and understanding emotions, age and gender were not. Overall, the regression model using AES four factors, age and gender was significant with good accuracy in predicting perceived stress. Overall, interpretations of fall 2012, data suggest the higher emotional intelligence is associated with lower perceived stress and the ability an individual to better manage his/her own emotions was associated with lower perceived stress regardless of age or gender.

The spring 2012 assessment results demonstrated a strengthened predictive relationship between AES and perceived stress. In model 3, AES total score and age were the significant contributors. The model using AES total score, age and gender was significant with good accuracy in predicting perceived stress. Model 4 was a hierarchical linear regression used to measure the ability of age to predict PSS-10 score above and beyond AES total score. Results suggest a small predictive power of age on PSS-10 score above the predictive power of AES scores such that students who score higher AES total score are more likely to have lower PSS-10scores and those individuals are more likely to be older.

In Model 5, the AES factor score managing own emotions and age were significant contributors. Overall, the regression model using AES four factors, age and gender was significant with good accuracy in predicting perceived stress. Model 6 was a hierarchical linear regression used to measure the ability of age to predict PSS-10 score above and beyond the AES factor, managing own emotions. Resulted suggest a small predictive power of age on PSS-10score above the predictive power of AES factor scores such that students who score higher on managing own emotions factor are more likely to have lower PSS-10 scores and those individuals are more likely to be older.

The findings from this study in the perceived stress also support previous research. Research in dental students found higher emotional intelligence associated with lower perceived stress. Pau et al (2007) also found that gender was an independent predictor of perceived stress. Overall the study results support this finding however no significant difference due to age were found. The difference due to age was unique as the sample population did not have a much variation in age. One study found age to be a predictor of perceived stress for pregnant women (Shih-Hsien, 2006). However, the research on age as a predictor to perceived stress without moderator variables is quite limited. One suggestion for the result in the current study is that age is a factor in improved emotional intelligence as suggested by research (Schutte et al, 2006, Bar-on 2000).Though this study failed to find significant differences in AES scores by age in isolation, it maybe that differences due to age become more apparent when they are associated with other measures. In this study, EI skills by themselves were not significantly different by age. However, when the skills were applied to the one's perceptions of stress, age became a small but significant predictor. Since predictive accuracy of age is very low in this study and limited research is available, it is suggested that further research must be done in this area to clarify the issue.

5. Conclusion

5.1. EI and Academic Performance

In relation to academic performance EI specifically on AES factors managing own emotions and managing others emotions, demonstrated a small amount of accuracy in predicting knowledge based learning represented by GPA in the fall. This relationship dissipated in the spring. Due to previous research and the results of this study, it is concluded, skills underlying the ability to better manage one's own emotion in areas including interactions with peers, teaching faculty, personal relationships of family and friends are beneficial in dealing with overall academic pressure including GPA. While the ability to better manage others' emotions related to lower ability to manage one's own emotions. These abilities in EI facilitate adjustment to academics demands that occur in the first semester of medical school and it appears to be more evident in females. As students become acclimated during spring semester, this relationship dissipates.

5.2. Perceived Stress Conclusions

Both fall and spring assessments supported the prediction. In relation to perceived stress, AES total score demonstrated low accuracy and AES factors managing own emotions, demonstrated good accuracy in predicting individuals reported level of perceived stress. This is similar to the relationship between EI and fall GPA, suggesting that the EI relationship to perceived stress may mirror the EI relationship to GPA. This means the perceived level of reported stress is related to the adjustment of a new environment with new expectations and demands.

Results from this study concluded that both AES relationships strengthened from fall to spring, demonstrating good accuracy in predicting perceived level of stress. In the spring, age also demonstrated a small level of accuracy in predicting perceived stress above EI measures. This is the most unique finding of the study. In theory, if the pattern demonstrated by EI and GPA continued, it would be expected that students would adjust to environmental demands and pressures of medical school during the fall semester and the relationship between perceived stress and AES, specifically the ability to manage own emotions would also dissipate. However, this was not the case. In fact, the relationship between AES total and specifically the ability to manage personal emotions strengthened in its ability to predict stress. Age also came into play supporting previous findings that EI increased with age. Due to previous research and current findings it is concluded the skills underlying EI, primarily the ability to manage personal emotions, play a greater role reducing perceive level of stress. It is further concluded that EI is more than just facilitating adjustment to a new environment. As high school students increase their awareness of the demands, they may continue to succeed academically, but those with lower EI who are younger and those who have difficulty managing their own emotions report higher levels of perceived stress. Those with higher EI who are older, better manage their own emotions report lower perceived stress. This raises a red flag when looking to general health and wellbeing of students and future wellbeing.

6. Implications for Practice

The results of this study can be applied to current and future teachers in several ways. It is suggested that EI's impact on stress is comparable to physician stress and burnout which in turn has negative impacts on patient care. A common method of measurement reports emotion exhaustion and depersonalization as factors to physician burnout (Chopra, Sotile, Sotile, 2004).Therefore increasing EI may address these factors by increasing one's ability to perceive understand manage emotions reducing emotional exhaustion and increasing interpersonal communication.

From a patient care perspective EI is that elusive factor that impacts patient satisfaction. If we just look at the ability to manage personal emotions there are several studies that improved EI could

impact. For example, 72% of physicians interrupted the patient after an average of 23seconds. Patients who were not interrupted by physicians took on average only 6 more seconds to state their concerns (Marvel, Epstein, Flowers, Beckman, 1999). One study found during 20minute visits physicians believed they were spending over 9 minutes in information exchange with patients, but were actually averaging only 1 minute with patients (Waitzkin, 1984). We can look at the ability to manage the emotions of others and compare it to patient care. For example, when doctors sat during visits, the patients always perceived the visit to be longer than if the doctor stood during the visit, even though visits were the same length of time. If we look at the ability to perceive and understand emotions we can also apply that to patient care.

References

Austin, E. J., Evans, P., Magnus, B., O'Hanlon, K. (2007). A preliminary study of empathy, emotional intelligence and examination performance in MBChB students. *Medical Education 41*(7), 684-689

Bar-On, R. (2000). Emotional and social intelligence: Insights from the emotional quotient inventory (EQ-i). In R. Bar-On and J.D.A. Parker (Eds.), *Handbook of emotional intelligence.* San Francisco, CA: Jossey-Bass.

Bellanger, F., Smith, W. J., Lewis, T. L., Harrington, V. K. & Kasper, G. (2007, August) *Coping Strategies and Emotional Intelligence*: New Perspectives on IT Students. Paper presented at the America's Conference on Information Systems Keystone, CO.

Carrothers R. M., Stanford W. G., & Gallagher T.J. (2000). Measuring emotional intelligence of medical school applicants.*Academic Medicine.75*, 456–63.

Caruso, D. R., Mayer, J. D., &Salovey, P. (2002). Relation of an ability measure of emotional intelligence to personality.*Journal of Personality Assessment, 79*, 306-320.

Chopra SS, Sotile WM, Sotile MO. Physician burnout. JAMA 2004;291(5):633.

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan& S. Oskamp (Eds), .), The social psychology of health: Claremont Symposium on applied social psychology. Newbury Park, CA: Sage.

Cohen, S.; Doyle, W. J., and Skoner, D. P. Psychological stress, cytokine production and severity of upper respiratory infection. Psychosomatic Medicine.1999; 61:175-180.

Day, A. L., Newsome, S. &Catano, V. M. (2002).*Emotional intelligence and leadership*.(CFLI Contract Research Report #CR01-0078) Kingston, ON: Canadian Forces Leadership Institute

Dryden, G., &Vos, J. (1994).*The learning revolution.* Winnipeg, Canada: Skills of Learning Publication.

Dyrbye, L. M., Thomas, M. R. &Shanafelt, T. B. (2006).Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students.*Academic Medicine, 81*(4), 354-373.

Elam C. L., Stratton T. D. &Andrykowski M. A. (2001). Measuring emotional intelligence of medical school matriculants.*Academic Medicine.76,* 507–508.

Goleman, D. (1998). *Working with emotional intelligence*. New York: Bantam

Lam, L. T. & Kirby, S. L. (2002). Is emotional intelligence an advantage? An exploration of the impact of emotional and general intelligence on individual performance. *Journal of Social Psychology, 142*(1), 133-143.

Marvel, KM, Epstein, RM, Flowers, K, Beckman, HB (1999). Soliciting the patient's agenda: Have we improved? *JAMA, 281*, 283-287

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003).Measuring emotional intelligence with the MSCEIT v2.0.*Emotion, 3*(1), 97-105.

Pau, A.K.H., Croucher, R. (2003). Emotional intelligence and perceived stress in dental undergraduates.*Journal of Dental Education. 67*(9), 1023-1028.

Pau, A.K.H., Croucher, R., Sohanpal, R., Muirhead, V., & Seymour, K. (2004).Emotional intelligence and stress coping in dental undergraduates-a qualitative study, *British Dental Journal 197,* 205-209.

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*, 167–177.

Schutte, N.S., Malouff, J.M., Simunek, M., McKenley, J., & Hollander, S. (2002). Characteristics emotional intelligence and emotional well-being. Cognition and Emotion, 16, 796-85.

Shih-Hsien, K. Stress and maternal adaptation and different severities of nausea and vomiting: A comparative study Poster presented The 17th International Nursing Research Congress Focusing on Evidence-Based Practice (19-22 July 2006) Kaohsiung, Taiwan

Stewart, S. M., Lam, T. H., Betson, C., Wong, C. M. & Wong, A. M. (1999).A prospective analysis of stress and academic performance in the first two years of medical school.*Medical Education 33* (4), 243–250.

Wagner, P.J., Moseley, G.C., Grant, M.M., Gore, J.R. & Owens, C. (2002). Physicians' emotional intelligence and patient satisfaction. *Family Medicine, 34*(10), 750-754.

Waitzkin H (1984). Doctor-Patient Communication *JAMA, 252*, 2441-2446

.

Appendix A

ACADEMIC PERFORMANCE

Fall 2012

Model 1

Table 3. Bivariate Correlations for AES Total score, age and gender with Fall GPA

	Gender
AES	0.33

Model 2

Table 4. Summary for predictor variables (AES factor scores, age and gender)

df	F	P
149	2.132	.023

Table 5. t-test (coefficients for predictor variable AES facor scores, age and gender with Fall GPA)

Predictors	df	t	P
Managing own	149	2.834	.003
Managing others	149	2.346	.021
Gender	149	2.124	.028

Table 6. Bivariate Correlations for AES factor scores, Manage Other and Understanding Emotions with gender

Variable	Gender
Manage others	0.435
Understand	0.246

Model 3

Table 7. ANOVA of Fall GPA with AES Total score, age and gender

df	F	P
149	3.432	.021

Table 8. t-test (coefficients for predictor variables Manage Own and Manage Others, with Fall GPA)

Predictors	df	t	P
Managing own	149	2.142	.032
Managing others	149	2.521	.013

Table 9. Bivariate Correlations for AES Total score, age and gender with Fall GPA

Variable	Gender
Manage own	-0.421
Fall GPA	

Table 10. t-test (coefficients for predictor variables with Fall GPA)

Predictors	df	t	P
Managing own	149	2.643	.006
Managing others	149	3.321	.002
Gender	149	2.431	.012

Perceived Stress

Fall 2012

Model 1

Table 11. ANOVA of Fall AES Total score, age and gender with PSS-10

df	F	P
149	3.321	.032

Table 12. Bivariate Correlations for AES Total score, age and gender with Fall PSS-10

	AES	Gender
Fall PSS10	0.242	
AES		0.226

Model 2

Table 13 ANOVA of AES factor scores, age and gender with Fall PSS-10

df	F	P
149	5.143	.000

Table 13 t-test (coefficients for predictor variable AES factor scores, age and gender with Fall PSS-10)

Predictors	df	t	P
Managing own	149	4.734	.001

Table 14 Bivariate Correlations for AES factor scores, Manage Other and Understanding Emotions with gender

Variable	Fall PSS-10	Gender
Perception		0.163
Manage own	-0.321	
Manage others		0.346
Understand		0.214

Spring 2012

Model 3

Table 15 ANOVA of Spring AES Total score, age and gender with Spring PSS-10

df	F	P
79	16.221	.000

Table 16 t-test (coefficients for predictor variable AES total score, age and gender with Spring PSS-10)

Predictors	df	t	P
AES	79	7.421	.000
Age	79	2.532	.006

Table 17 Bivariate Correlations for AES Total score, age and gender with Spring PSS-10

Variable	Fall PSS-10
Spring PSS10	-.542

Model 4

Table 18 ANOVA of Spring AES Total score, with Spring PSS-10

df	F	P
79	38.512	.000

Table 19 t-test (coefficients for predictor variable AES total score, with Spring PSS-10)

Predictors	df	t	P
AES	79	-6.421	.000

Model 5

Table 20 ANOVA of AES factor scores, age and gender with spring PSS-10

df	F	P
76	11.421	.000

Table 21 t-test (coefficients for predictor variable AES factor scores, age and gender with Spring PSS-10)

Predictors	df	t	P
Managing own	79	-3.732	.000
Age	79	2.978	.004

Table 22. Bivariate Correlations for AES factor scores, age and gender with Spring PSS-10

Variable	Sping PSS-10	Gender
Perception	-0.365	
Manage own	-0.421	
Manage others	-0.532	0.321
Understand	-0.298	